

1 **GOALS, OBJECTIVES, AND ACTION ITEMS**

2 The following excerpts from the *Nebraska Revised Statutes* provide context for the development of  
3 goals, objectives, and action items for this plan.

4 **Integrated Management Plans**

5 *Neb. Rev. Stat. §46-715(2)*: “In developing an integrated management plan, the effects of existing and  
6 potential new water uses on existing surface water appropriators and groundwater users shall be  
7 considered. An integrated management plan shall include the following: (a) Clear goals and objectives  
8 with a purpose of sustaining a balance between water uses and water supplies so that the economic  
9 viability, social and environmental health, safety, and welfare of the river basin, subbasin, or reach can  
10 be achieved and maintained for both the near term and the long term....”

11 *Neb. Rev. Stat. §46-715(3)*: “In order to provide a process for economic development opportunities  
12 and economic sustainability within a river basin, subbasin, or reach, the integrated management plan  
13 shall include clear and transparent procedures to track depletions and gains to streamflows resulting  
14 from new, retired, or other changes to uses within the river basin, subbasin, or reach. The procedures  
15 shall:

- 16 (a) Utilize generally accepted methodologies based on the best available information, data, and  
17 science;
- 18 (b) Include a generally accepted methodology to be utilized to estimate depletions and gains to  
19 streamflows, which methodology includes location, amount, and time regarding gains to  
20 streamflows as offsets to new uses;
- 21 (c) Identify means to be utilized so that new uses will not have more than a de minimis effect upon  
22 existing surface water users or ground water users;
- 23 (d) Identify procedures the natural resources district and the department will use to report, consult,  
24 and otherwise share information on new uses, changes in uses, or other activities affecting water  
25 use in the river basin, subbasin, or reach;
- 26 (e) Identify, to the extent feasible, potential water available to mitigate new uses, including, but not  
27 limited to, water rights leases, interference agreements, augmentation projects, conjunctive use  
28 management, and use retirement;
- 29 (f) Develop, to the extent feasible, an outline of plans after consultation with and an opportunity to  
30 provide input from irrigation districts, public power and irrigation districts, reclamation districts,  
31 municipalities, other political subdivisions, and other water users to make water available for offset  
32 to enhance and encourage economic development opportunities and economic sustainability in  
33 the river basin, subbasin, or reach; and
- 34 (g) Clearly identify procedures that applicants for new uses shall take to apply for approval of a new  
35 water use and corresponding offset...”

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1 **Fully Appropriated definition**

2 *Neb. Rev. Stat. §46-706(27):* "Overall difference between the current and fully appropriated levels  
3 of development means the extent to which existing uses of hydrologically connected surface water  
4 and ground water and conservation activities result in the water supply available for purposes  
5 identified in subsection (3) of section 46-713 to be less than the water supply available if the river  
6 basin, subbasin, or reach had been determined to be fully appropriated in accordance with  
7 section 46-714."

8 *Neb. Rev. Stat. §46-713(3):* "A river basin, subbasin, or reach shall be deemed fully appropriated if  
9 the department determines based upon its evaluation conducted pursuant to subsection (1) of this  
10 section and information presented at the hearing pursuant to subsection (4) of section 46-714 that  
11 then current uses of hydrologically connected surface water and ground water in the river basin,  
12 subbasin, or reach cause or will in the reasonably foreseeable future cause (a) the surface water  
13 supply to be insufficient to sustain over the long term the beneficial or useful purposes for which  
14 existing natural-flow or storage appropriations were granted and the beneficial or useful purposes  
15 for which, at the time of approval, any existing instream appropriation was granted, (b) the  
16 streamflow to be insufficient to sustain over the long term the beneficial uses from wells  
17 constructed in aquifers dependent on recharge from the river or stream involved, or (c) reduction  
18 in the flow of a river or stream sufficient to cause noncompliance by Nebraska with an interstate  
19 compact or decree, other formal state contract or agreement, or applicable state or federal laws."

20 **Essence of these statutes**

21 The excerpts of statute above provide the overall guidance for the goals, objectives, and action  
22 items contained in this plan. Specifically, the statutes:

- 23 1. Define the difference between over and fully appropriated as the condition where existing  
24 uses of surface water and groundwater result in the available water supply to be less than  
25 the water supply needed to sustain: a) the beneficial or useful purpose for which existing  
26 natural-flow or storage appropriations were granted, b) beneficial uses from wells  
27 constructed in aquifers dependent on recharge from the river or stream, c) compliance by  
28 Nebraska with an interstate agreement.
- 29 2. State that the integrated management plan (IMP) goals and objectives should strive for  
30 sustaining a balance between uses and supplies so that the economic viability, social and  
31 environmental health, safety, and welfare of the river basin, for both short-term and long-  
32 term, is maintained.

33 The goals and objectives of this plan address the activities necessary to make progress from current  
34 to fully appropriated conditions, while considering the economic viability, social and environmental  
35 health, safety, and welfare of the basin.

36 **Water Supplies and Uses**

37 The Platte Basin water supply is variable. The primary source of water in the Upper Platte River  
38 Basin is precipitation, which varies spatially and temporally across the region. In the mountains of

1 Wyoming and Colorado, much of the precipitation falls as snow, which serves as a seasonal, natural  
2 reservoir, releasing water when snow melts in the late spring and summer. This natural, seasonal  
3 reservoir is supplemented across the basin with human-made structures, such as Pathfinder  
4 Reservoir and Lake McConaughy. In addition to surface water runoff, precipitation also infiltrates  
5 and recharges the aquifers that provide baseflows to the Platte River. Aquifer recharge has also  
6 been enhanced due to the development and use of surface water canals, where a portion of flows  
7 conveyed through the canals seep into the aquifer. Through a combination of natural and human-  
8 made influences, three distinct time scales exist for precipitation contributions to the Platte River.  
9 Natural runoff from rainfall feeds river flows in a matter of hours to days. Runoff from snowfall and  
10 storage/releases from human-made surface water reservoirs typically occur on a seasonal scale.  
11 Finally, aquifer recharge and baseflow accretions to the Platte River occur over a period of months  
12 to years.

13 These natural and human-made storage options have enabled development of large-scale surface  
14 water agricultural irrigation during the otherwise dry later summer months in the western portions  
15 of the Upper Platte River Basin. In spite of the substantial basin water storage capacity, during  
16 extended drought periods water user needs can potentially exceed the ability of these storage  
17 options to fully mitigate drought, as observed during the 2003-2006 extended drought period.

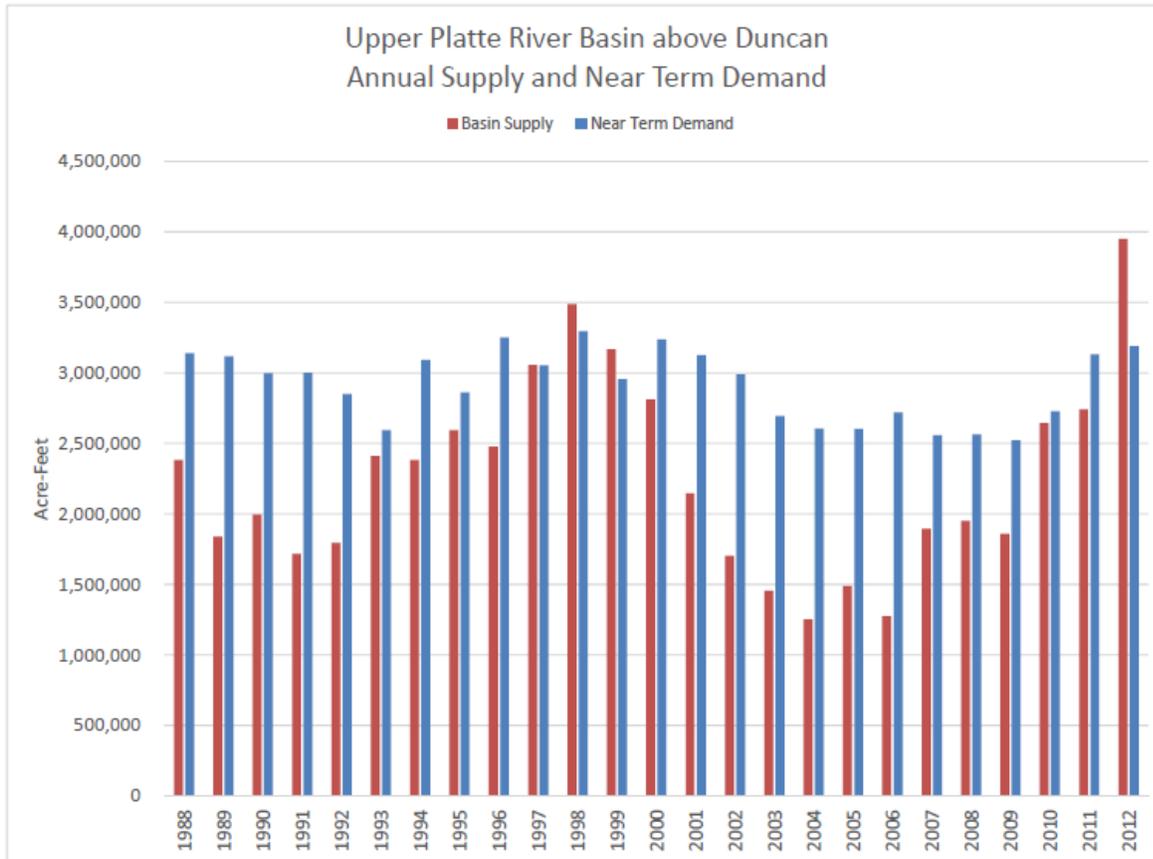
18 Water use is also variable. Irrigation demands consistently peak during July and August, but the  
19 timing and amount of peak demand in one year can be substantially different from year to year at  
20 any particular location. Storage water is also used for hydroelectric power generation and for  
21 cooling steam-electric power plants. Both uses are dependent on regional power demands on any  
22 given day. Likewise, demands for other uses such as municipal, industrial, and commercial uses  
23 also varies day to day.

24 State statutes define a fully appropriated condition as one in which current uses will result in not  
25 having the water necessary to meet the beneficial purposes of existing surface water and  
26 groundwater uses in aquifers dependent upon recharge from the river or stream. Both the supply  
27 side of the equation and the use side of the equation are variable spatially and temporally across  
28 the basin, so on any given day, the basin could be in a fully appropriated condition with all the  
29 beneficial uses being met, or in an overappropriated condition with the beneficial uses not being  
30 met. The table and chart below summarize the results of the INSIGHT analysis conducted for the  
31 basin above Duncan (for years 1988-2012) during the first increment and illustrate this variability  
32 (see Appendix XXX). The INSIGHT analysis looks at the water supplies during a given year and  
33 demands for water – both from surface water and hydrologically connected groundwater - in that  
34 same year. The years 1988-2012 represent a statistically unbiased representation of hydrology in  
35 the basin.  
36

1 Table 1. Summary of Supplies and Demands for the Platte Basin above Duncan – 1988-2012<sup>1</sup>

	Maximum Annual	Minimum Annual	Mean Annual
Supply	3.95M AF (2012)	1.25M AF (2004)	2.26M AF
Demand	3.30M AF (1998)	2.52M AF (2009)	2.91M AF

2  
3 Figure 1. Summary of Supplies and Demands for the Platte Basin above Duncan – 1988-2012



4  
5 Because of the variability of hydrologic conditions within this river system, spatially and temporally  
6 appropriate management actions must be developed, implemented, monitored, and regularly  
7 re-evaluated to ensure that existing beneficial uses are being protected, so that the economic viability,

<sup>1</sup> The Basin Supply term represents an estimate of total water supply without human-made depletions and can be summarized as: Basin Supply = Streamflow + SW Consumptive Use + GW Depletions. The Near Term Demand represents an estimate of total basin demands and can be summarized as: Near Term Demand = GW Depletions + SW Demand + Net SW Loss + Non-Consumptive Use Demand. The Non-Consumptive Use term of the total demand recognizes that these types of demands are not cumulative, therefore the maximum of the non-consumptive uses (instream flow demand, hydropower, and downstream demand) is used.

1 social and environmental health, safety, and welfare of the river basin can be maintained for both the  
2 near-term and the long-term. The focus of the management actions are not on mitigating shortages  
3 that may occur due to the natural variations in the hydrologic cycle. The prior appropriation doctrine  
4 used in Nebraska for administering surface water has provided and will continue to provide a  
5 mechanism for managing those shortages that can be expected due to variations in the hydrologic  
6 cycle. Rather, the management actions, and this plan, are focused on mitigating human-made effects  
7 on surface water supplies to maintain beneficial uses of appropriations and provide adequate recharge  
8 to those aquifers dependent on stream flow during times of shortages in water supply.

9 Statute requires working towards a balance of water supply and water use, while considering impacts  
10 on the near- and long-term economic viability, social and environmental health, safety, and welfare of  
11 the river basin. Throughout the stakeholder process for the second increment, significant discussion  
12 occurred on this topic. Stakeholders identified economic viability in a number of ways, including:

- 13 • a steady income,
- 14 • water needed to provide for the beneficial uses of appropriators including the generation of  
15 hydropower,
- 16 • financial support to maintain benefits of surface water irrigation projects,
- 17 • cooling water for power generation,
- 18 • the sustainability of canal systems,
- 19 • resiliency to withstand drought,
- 20 • flexibility in the use of natural flow and stored water, and
- 21 • conjunctive management.

22 Stakeholders clearly believe that the most significant impact on the economic viability of users across  
23 the basin occurs during times of drought. Therefore, the Second Increment Plan recognizes that a  
24 focus on drought planning and mitigating the effect of depletions that amplify effects of drought  
25 conditions, will be an important step toward consistently achieving a fully appropriated condition. In  
26 addition, more data and analyses of water supply and demands as related to economic viability, social  
27 and environmental health, safety, and welfare of the river basin, subbasin, or reach for both the short-  
28 term and long-term are needed to develop a more targeted set of goals and objectives for achieving  
29 a fully appropriated condition for the long term. Finally, much has been accomplished through  
30 implementation of the first increment basin plan and individual IMPs of the district. Stakeholders  
31 recognized these successes and generally felt those elements should be retained for the second  
32 increment of the basin plan.

33 The goals, objectives, and action items contained in this plan were developed through extensive  
34 collaboration with the stakeholders of the basin and define the activities to be accomplished in this  
35 increment, to the extent possible based on staffing and resource constraints.

**Goal 1:** Incrementally achieve and sustain a fully appropriated condition while maintaining economic viability, social and environmental health, safety, and welfare of the basin.

**Objective 1.1:** Maintain previous increment mitigation efforts.

During the development of the first increment of the basin wide plan, estimates of post-1997 use depletions requiring offset for each NRD were developed. Each of the NRDs met the identified depletion offset during implementation of the first increment plan. A summary of first increment activities is included in [Appendix XXX](#).

Models, tools, and overall understanding of the basin hydrology were also improved during implementation of the first increment plan and applied in the first increment robust review (process described in Objective 1.4). Application of these tools and understanding has resulted in refined estimates of post-1997 depletions that are typically greater than the original estimates included in the first increment plan. The robust review also provided estimates of the first increment offsets achieved by each of the NRDs.

Table 1.1.1 summarizes the results of the first increment robust review by NRD. The first column is the estimated depletions from all groundwater uses. The second column is the portion of computed depletions due to those uses initiated before July 1, 1997, referred to as pre-1997. The third column is the portion of computed depletions from those uses initiated after July 1, 1997, referred to as post-1997. The last column is the offsets accomplished by each NRD during the first increment of the basin plan.

Table 1.1.1 First Increment Robust Review Results Summary

NRD	Total Depletion	Pre-1997 Use Depletion	Post-1997 Use Depletion	1 <sup>st</sup> Increment Offsets Achieved
NPNRD				
SPNRD				
TPNRD				
TBNRD				
CPNRD				

Table 1.1.2 summarizes by NRD total groundwater irrigated acres, as well as the portion of those acres that were add after July 1, 1997. In addition, annual total pumping volumes are provided with the portion of that pumping that is for irrigation and municipal and industrial uses.

1 Table 1.1.2 First Increment Robust Review Groundwater Irrigation and Pumping  
 2 Summary

NRD	Total Groundwater Irrigated Acres	Post -1997 Groundwater Irrigated Acres	Total Annual Pumping	GW Irrigation Annual Pumping	M&I Annual Pumping
NPNRD					
SPNRD					
TPNRD					
TBNRD					
CPNRD					

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 4 Progress made during the first increment will be maintained in this increment and keep the  
 5 basin moving toward achieving a long-term balance of water supplies and uses while  
 6 maintaining economic viability, social and environmental health, safety, and welfare of the  
 7 river basin.  
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**Action Item 1.1.1:** Keep policies, projects, and practices in place that provide offsets or supply equivalent offsets so that the current level of depletions is not exceeded.

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 11 Much progress toward reaching a fully appropriated condition was made in the first  
 12 increment through implementation of various offsets and mitigation actions. This  
 13 includes efforts to offset depletions from water uses initiated after July 1, 1997, and  
 14 in some areas progress toward offsetting pre-1997 depletions. Many of these efforts  
 15 capitalized on federally funded programs, like the Conservation Reserve  
 16 Enhancement Program, and on state and local programs funded through NeDNR  
 17 and the basin NRDs. Continued availability of these funding sources during the  
 18 second increment of the plan is uncertain and may effect management activities  
 19 during the second increment. While projects, policies, and practices may change  
 20 during this increment, the progress made during the first increment will be  
 21 maintained in this increment toward achieving a long-term balance of water supplies  
 22 and uses while maintaining economic viability, social and environmental health,  
 23 safety, and welfare of the river basin.  
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**Objective 1.2:** Offset impacts of streamflow depletions to (A) surface water appropriations and (B) water wells constructed in aquifers dependent on recharge from streamflow to the extent those depletions are due to water use initiated after July 1, 1997.

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3 In accordance with statutes, to reach a fully appropriated condition, depletions to  
4 streamflows from uses initiated after July 1, 1997, must be offset. Depletions associated with  
5 post-1997 uses are therefore the priority to be addressed by the plan. The action items  
6 under this objective outline the process and considerations for addressing these depletions  
7 during plan implementation. Depletions associated with post-1997 levels of development  
8 are to be fully offset by the end of the second increment. The timetable for addressing the  
9 post-1997 use depletions during implementation of this plan increment will be identified by  
10 the individual NRDs and included in the individual IMPs.

11 *Neb. Rev. Stat. § 46-715 (3)* provides guidance on facilitating new development within  
12 overappropriated areas. The statutes calls for procedures and processes to be identified in  
13 the individual IMPs for allowing news uses while ensuring that the mitigation measures  
14 sufficient to offset those new depletions are put in place.

**Action Item 1.2.1:** The identification of pre- and post-1997 levels of development and associated depletions includes assessment of the following:

- changes in irrigated acres;
- changes in municipal and domestic uses of water;
- changes in livestock use of water;
- changes in industrial uses of water;
- changes in the amount of surface water and groundwater applied on commingled irrigated land; or
- any other relevant changes in water consumption that affect streamflows.

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1 Estimates of pre- and post-1997 levels of development and associated depletions  
2 have been determined for each NRD and are illustrated in Table 1.1.1. The first step  
3 in this process involved using modeling tools to estimate depletions to streamflows  
4 from water uses initiated prior to July 1, 1997. This establishes a pre-1997 level of  
5 development condition. The second step in the process is to add the post-1997 uses  
6 to the pre-1997 level of development condition and simulate these conditions using  
7 the same modeling tools. Computed depletions from this simulation in excess of the  
8 pre-1997 condition are then required to be offset.

9  
10 **Appendix XX** contains a summary of estimated depletions and offsets requirements  
11 for the second increment, specifically:

- 12 • Computed streamflow depletions from the pre-1997 level of development
- 13 • Computed depletions including those resulting from post-1997 uses within  
14 each NRD and the Upper Platte River Basin as a whole.
- 15 • Current estimate of depletions within each NRD that must be offset.

16  
17 As noted in **Appendix XX**, the robust review results recognize the temporal variability  
18 in required depletion offsets – both from year to year, as well as seasonally within the  
19 year. The results of the robust review can be used to determine seasonal and monthly  
20 offset requirements. The seasonal variation is important as it illustrates the  
21 opportunity for active vs. passive management to meet depletion offset requirements.  
22 Examples of passive management projects are intentional recharge of excess flows  
23 using canals or recharge pits, where water seeps into the aquifer and baseflow  
24 accretions due to the additional recharge occur naturally throughout the year. Active  
25 management includes targeted mitigation projects such as augmentation projects,  
26 where water is pumped or released at a specific time to directly impact streamflows  
27 during times of shortage. The information contained in **Appendix XX** can be used to  
28 determine appropriate targets for passive or active management approaches.

29  
30 The depletion estimates presented in **Appendix XX** are based on the most recent  
31 modeling efforts in support of the first increment robust review, completed in 2018  
32 during development of the Second Increment Plan. These depletions estimates will be  
33 reviewed periodically using agreed upon modeling tools. Models, supporting data and  
34 information, and the understanding of the Basin’s hydrology continue to evolve. As  
35 new tools, information, and understanding is applied, it is anticipated that the values  
36 for depletions presented in **Appendix XX** may change. As new depletion information is  
37 developed and considered, the values presented in **Appendix XX** may be updated and  
38 the basin-wide plan revised via a public hearing at the annual basin meeting. While  
39 values for the level of allowable depletions and depletions requiring offsets may  
40 change during this increment of the plan, Objective 1.1 calls for continuing, as  
41 appropriate, first increment activities to offset depletions.

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**Action Item 1.2.2:** Identify, quantify, and proportion the source and quantity of water used on acres irrigated with both surface water and groundwater. Gather data on water use on such lands (both why and when irrigators use surface water or groundwater).

The impacts to water supply on lands with access to both surface water irrigation and groundwater irrigation, referred to as “commingled acres”, need to be investigated. Data on when surface water or groundwater is used on commingled acres is important to fully understand the impact of irrigation of these lands on stream flow. Surface water irrigation and groundwater irrigation typically have different delivery and application efficiencies which affect the amount of water withdrawn to meet crop demands, and ultimately the fate of that water (seepage, evaporation, returns, consumptive use, etc.). The timing of impacts on stream flow is also affected by the source of water used: surface water diversion is an immediate depletion to stream flow, while use of groundwater has a time-lagged effect on stream flow.

Further understanding the sources of water used on commingled acres allows better representation of water usage in modeling tools and evaluations. For modeling purposes and to determine post-1997 depletions, it is important to know historically when acres may have changed from irrigation by surface water alone to commingled or groundwater-only irrigation.

**Action Item 1.2.3:** Continue to identify and implement projects that may be used to enhance water supply. These projects shall be pursued on a basin-wide level, when such projects will help achieve sustainable levels of supply and use and address water shortages in one NRD that affect more than one NRD.

Options for offsetting the impacts of post-1997 depletions can be either direct reduction of consumptive use (Action Item 1.2.4), enhancing existing water supplies in other ways, or projects that improve management of existing supplies in such a way that depletions can be either reduced or directly offset. Projects to offset depletions that affect more than one NRD will be coordinated and pursued at a basin-wide level. Program Water Action Plan projects, if funded in part or wholly by the State or NRDs, can be used to meet post-1997 offset requirements or progress towards fully appropriated. If no State or NRD funding is used for a Water Action

1 Plan project, the benefits of the project - depending on the location, timing,  
2 operation, etc. of the project - may accrue as progress towards fully appropriated.  
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**Action Item 1.2.4:** Continue to reduce consumptive water use through retirement of irrigated lands, water use allocation, and/or other management options.

5  
6 One option for offsetting the impacts of post-1997 depletions is reduction of  
7 consumptive water use. This can be accomplished through retirement of irrigated  
8 acres, water use allocations, and/or other management options. The analyses  
9 described in Action Items 1.4.2 and 1.4.3.1 are the basis for determining offsets  
10 provided by management activities aimed at reducing consumptive use. Crop types  
11 and producer practices may result in increases or decreases in consumptive use, so  
12 tracking current crop types and practices will be important to determine future  
13 estimates of consumptive use. Offsets that are accrued through consumptive use  
14 reductions are credited to the NRD in which they occur, and ultimately the basin, in  
15 meeting the post-1997 offset requirements.  
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**Action Item 1.2.5:** Ensure that offsets of depletions occur at the appropriate time, amount, and location to mitigate the impact of the depletion. Allow for flexibility in providing offsets when appropriate.

18  
19 The timing of the highest demand, and therefore potential impact of depletions, varies  
20 spatially across the basin. It is important that depletion offsets identified in Action  
21 Items 1.2.3 and 1.2.4 provide a volume of water to the stream sufficient to make up for  
22 the associated depletions in the locations in which the depletions occur to effectively  
23 offset depletions. Preferably monthly and at a minimum seasonally, offsets would  
24 occur in the same time and within the same reach as the depletions they are  
25 mitigating so as not to affect downstream users' access to water. The results of the  
26 robust review contained in Appendix XX provide the timing, quantity, and location of  
27 required depletion offsets.  
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**Action Item 1.2.6:** Apply current methodologies, and continue to refine these methods of estimating depletions and accretions. Gather and evaluate data that could be used to estimate depletions and accretions to streamflow using tools as agreed on by NeDNR and the NRDs. Apply these methods for calculating depletions and offsets uniformly across the basin.

1 Whenever an analysis is performed to determine compliance with this Basin-Wide Plan  
2 or any Integrated Management Plan subject to this Basin-Wide Plan, the methods  
3 utilized will be conceptually consistent so that stream depletions estimated/calculated  
4 in one area of the basin are an “apples to apples” comparison to stream depletions  
5 estimated/calculated in another area of the basin.  
6

7 Models, supporting data and information, and our understanding of basin hydrology  
8 will continue to evolve during implementation of the plan. As this information  
9 becomes available and is evaluated, NeDNR and the NRDs will refine the  
10 methodologies and tools used to estimate depletions and accretions throughout the  
11 basin. This information will be shared as part of the annual reporting for this plan  
12 described in Objective 5.1. Methods, tools, and data used will be made available to  
13 the stakeholders and the public. The process for incorporating new information and  
14 results into this plan document and/or supporting appendices will include a public  
15 hearing at the annual meeting.  
16

17 The term ‘uniform’ in this action item (and elsewhere in the plan when referring to  
18 consistency in analysis) is not intended to dictate that same methods be used  
19 throughout the basin, as differences in available data, water supply and uses, climate,  
20 etc. across the basin will require differences in the methodologies employed. Rather  
21 the term ‘uniform’ is intended to indicate that the methodologies must be consistent  
22 in concept to provide an apples-to-apples comparison across the basin.  
23  
24

**Objective 1.3:** Make progress toward a fully appropriated condition.

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26  
27 Objective 1.1 calls for maintaining first increment offset achievements and Objective 1.2  
28 addresses post-1997 use depletions – a priority in progress towards a fully appropriated  
29 condition. Objective 1.3 is aimed at actions to make progress towards fully appropriated  
30 conditions while maintaining the economic viability, social and environmental health, safety,  
31 and welfare of the basin. Throughout the planning process and stakeholder discussion, some  
32 of these elements are believed to be largely addressed through other activities in the basin or  
33 will be addressed through implementation of this plan and will not require specific actions to  
34 address. Namely:

- 35 • Social and environmental health: Addressed through implementation of the Platte River  
36 Recovery Implementation Program (See Objective 2.1) and continued protection of  
37 instream flow appropriations.
- 38 • Safety: Addressed by not limiting access to emergency water supplies, as well as the  
39 capture and conjunctive management of flood flows to reduce flooding.
- 40 • Welfare: Addressed through implementation of this plan.  
41

1 Economic viability was identified as a critical element that warranted specific objectives to  
2 fully address.  
3

4 Based on examination of the water supplies and water demands in the basin (INSIGHT  
5 analysis – see Appendix ZZZ) and extensive work done with the stakeholder group through  
6 the planning process to determine conditions where water users are economically  
7 vulnerable, cyclical supply variability due to both short and extended drought periods and  
8 natural geographic variation in precipitation distribution are significant factors affecting  
9 economic viability. Human-made depletions amplify dry periods of the cyclical supply  
10 variability. This goal is focused on maintaining the basin’s economic viability in the face of  
11 these variations in water supply and human-made depletion impacts.

12 The first three action items supporting this objective are organized in a logical progression—  
13 first, understanding and developing tools for determining economic impacts of supply  
14 variability (1.3.1), then approaches and protocols for assessing supplies, demands, and  
15 potential shortages and excesses<sup>2</sup> (1.3.2), and finally, developing approaches and solutions  
16 to maintain economic viability of water users in the basin (1.3.3). Each action item  
17 determines the necessity and informs the action items of the subsequent objective. Action  
18 Item 1.3.4 is a focused effort to address shortages to water users during periods of drought.  
19 Many of the stakeholders identified droughts as the only time their water supply was  
20 affected. Addressing human-made depletion impacts during these shortages will be a step  
21 toward a fully appropriated condition.

**Action Item 1.3.1:** Understand the economic impacts of supply variability on  
water users.

22  
23 Through the planning process conducted for the second increment, extensive  
24 discussion centered on vulnerabilities of stakeholders to the variable water supply.  
25 The action items related to this objective are geared toward developing a  
26 fundamental and quantitative understanding of the economic impacts on basin  
27 water users from variability in water supply.

**Action Item 1.3.1.1:** Identify who is affected (hydrologically and  
economically), and to what extent, by water supply variability.

28  
29 Conduct a study that identifies water users that are affected during cyclical  
30 variations in water supply. This hydrologic element analysis will be conducted  
31 by NeDNR and the NRDs by evaluating data such as stream gage and  
32 diversion records, and well hydrograph data. Focused surveys of, as well as

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<sup>2</sup> The assessment of supplies and demands under Objection 1.3 are focused on current and future conditions.

1 meetings with basin water users can be used to build on stakeholder input  
2 gathered throughout the planning process. Once impacted water users who  
3 are hydrologically affected by water supply variability are identified,  
4 economic impacts can be estimated as described in Action Items 1.3.1.2 and  
5 1.3.1.3.

**Action Item 1.3.1.2:** Partner with impacted water users and other entities to gather data and study economic impacts of supply variability as well as regulatory and management actions.

6  
7 NeDNR and the NRDs will collaborate with impacted water users and other  
8 entities to gather relevant economic data. Potential partners include  
9 economists and other subject matter experts familiar with the economic  
10 drivers of the basin who can help identify data needs and formulate the tools  
11 and methodologies for assessing economic impacts. The tools and  
12 methodologies will be used to not only evaluate impacts of supply variability,  
13 but also evaluate human-made depletion impacts, management actions,  
14 regulatory actions, and potential projects or other activities considered  
15 during implementation that may affect water availability.  
16

**Action Item 1.3.2:** Assess short- and long-term basin water supply and demand.

17  
18 This objective is focused on coordination and dissemination of information, not  
19 developing new methods or predictive tools. Many entities within the basin currently  
20 assess and predict upcoming water supplies (CNPPID, NPPD, surface water irrigation  
21 districts, NRDs, etc.), with varying degrees of complexity in the methods used.  
22 Likewise, forecasting of short- and long-term demands under variable hydrologic  
23 conditions is also necessary. Basin water use and supply data, such as the INSIGHT  
24 analysis results, can be used as a reference for forecasting future supply and  
25 demands, Likewise modeling tools such as the CROPSIM model can be used to  
26 forecast demands in the short and long term. Timely coordination and information  
27 exchange amongst basin stakeholders can further understanding of hydrologic  
28 conditions within the basin and inform management decisions. This objective is  
29 targeted toward drought preparedness. Understanding potential surpluses is as  
30 important as identifying potential droughts because management of surplus  
31 supplies can build resiliency within the basin to better withstand drought conditions.

**Action Item 1.3.2.1:** Evaluate expected natural flows of the Basin and available storage water.

1 Anticipated supplies for the coming year will be assessed, including  
2 consideration of factors such as mountain and plains snowpack, current  
3 reservoir storage levels, and current aquifer levels and prevailing trends.  
4 Communication and dissemination of this information provides a clear and  
5 consistent understanding of current and expected hydrologic conditions  
6 throughout the basin.

**Action Item 1.3.2.2:** Identify specific locations and flow targets critical  
to water users in the basin.

7  
8 The results of action items 1.3.1.1 through 1.3.1.3 provides the basis for  
9 determining locations and flow thresholds critical to each water user in an  
10 effort to maintain the economic vitality of the basin. The flow thresholds  
11 should consider variable demands and provide a range of anticipated  
12 demands based on variable hydrologic conditions. This information, coupled  
13 with anticipated supplies from action item 1.3.2.1, will inform management  
14 decisions.

**Action Item 1.3.2.3:** Forecast location and timing of shortage and  
excess within the basin.

15  
16 The anticipated supplies from action item 1.3.2.1, coupled with location and  
17 flow targets from action item 1.3.2.2, will inform management decisions in  
18 each year. In addition to seasonal or upcoming season forecasts of water  
19 supply, the feasibility of developing long-term forecasts of water supply (3-  
20 yr or 5-yr time frame) will be evaluated.

**Action Item 1.3.2.4:** Develop protocols for assessing and  
communicating available excess flows

21  
22 The ability to capture and use excess flows is dependent on advanced notice  
23 of the availability of excess flows. NeDNR will develop a protocol for  
24 assessing, predicting, and communicating 1) the potential of excess flows to  
25 basin water users, and 2) notice of actual availability of excess flows.

**Action Item 1.3.3:** Explore and implement potential measures to mitigate  
impacts (hydrologic and economic) of basin supply variability due to  
human-made depletions on surface water and groundwater users.

26  
27 This objective is focused on mitigating hydrologic and economic impacts of supply  
28 variability due to human-made depletions on water users identified during  
29 completion of Action Items 1.3.1 and 1.3.2. Discussions with the stakeholder group  
30 through the planning process identified potential approaches (hydrologic, financial,

1 etc.) for mitigating impacts. Action items 1.3.3.1 through 1.3.3.5 are to further  
2 evaluate these approaches for consideration.

3 **Action Item 1.3.3.1:** Evaluate options to maintain economic viability of  
4 surface water and ground water infrastructure.

5 Potential strategies to mitigate economic impacts that may be considered  
6 include:

- 7 • Compensation, which may include financial, for lost hydropower  
8 production to the extent groundwater depletions may have impacted  
9 hydropower production
- 10 • Funding for surface water irrigation district canal infrastructure  
11 improvements (storage, efficiency, etc.)
- Funding for groundwater recharge projects

12 **Action Item 1.3.3.2:** Identify conjunctive management opportunities.

13 Potential conjunctive management strategies to mitigate hydrologic impacts  
14 that may be considered include:

- 15 • Aquifer recharge enhancement to mitigate water level declines
- 16 • Offsetting depletions to groundwater aquifers due to groundwater use or  
17 reduced surface water recharge to allow land to stay in production while  
18 maintaining or increasing available water supply

19 (INSERT ADDITIONAL CONJUNCTIVE MANAGEMENT OPPORTUNITIES,  
20 BOTH THOSE IN PLACE AND THOSE THAT MAY BE CONSIDERED IN THIS  
21 INCREMENT.)

22 **Action Item 1.3.3.3:** Study potential for developing markets and transfer  
23 protocols for annual surface water and groundwater supplies.

24 A water market is an economic platform for temporary or permanent trades  
25 of the rights to use water (both surface water and groundwater), where the  
26 price of water is determined by variable economic and market conditions.  
27 Much is still unknown about the logistics, framework, and interest of water  
28 users in such a market. Some questions to be addressed include if there is  
29 potential for market-driven water management approaches in the basin and  
30 what might the physical, regulatory, and administrative framework of such a  
31 system look like for the Basin. This action item is focused on addressing these  
32 questions by working cooperatively with Basin water users in determining  
33 potential applicability and potential framework for a basin-wide water  
34 market. NeDNR and Central Platte NRD's pilot study in 2016 and 2017  
35 developed an algorithm and established a water market within CPNRD.  
Lessons learned from this effort can inform efforts under this action item.

**Action Item 1.3.3.4:** Study management options of storage water (both surface water reservoirs and aquifer storage; and existing and potential new storage) to provide flexibility and increase resiliency of water supplies.

1  
2 The importance of storage in the resiliency of basin water supply was a  
3 consistent theme during the stakeholder process. The ability to capture and  
4 store flow during times of excess, either in the aquifer or in surface water  
5 reservoirs, was identified as an important approach to improve the basin's  
6 resiliency under variable hydrologic conditions.

7 Many of the existing surface water storage facilities within the basin serve  
8 multiple purposes (irrigation, aquifer recharge, hydropower, environmental,  
9 recreation, etc.), increasing the complexity of operations. Within this context,  
10 new storage management approaches will be evaluated that could  
11 potentially improve the resiliency of the water supplies, while considering  
12 impacts to the multiple purposes currently served. Potential new storage  
13 opportunities, whether in new facilities or new storage allocations in existing  
14 facilities, will also be evaluated.

15 Opportunities for enhancing aquifer storage will also be studied. In addition  
16 to identifying supplies and recharge sites, effects on existing aquifer water  
17 quality and aquifer levels require consideration.

**Action Item 1.3.3.5:** Support diversity in revenue streams of water users within the basin.

18 During the stakeholder process, diversification of revenue streams was  
19 identified by many of the participants as a means for maintaining economic  
20 viability. Examples included eco-tourism, crop diversification, changes in land  
21 use, etc. While these types of activities are solely at the discretion of the  
22 individual users, NeDNR and the NRDs can provide expertise and education  
23 in support of constituent activities that support the goals and objectives of  
24 this plan and the individual NRD IMPs.  
25

**Action Item 1.3.4:** Develop a basin drought contingency plan for management of supplies during times of shortage.

26  
27 The basin drought contingency plan is part of the continuing efforts to reach fully  
28 appropriated conditions by addressing those shortages caused by short- and long-  
29 term drought conditions. The contingency plan discussed herein is to address  
30 conditions under a basin-wide or regional drought condition, not a local (county or  
31 NRD level) drought condition.

32 The basin drought contingency plan will focus on vulnerabilities identified through

1 coordination with basin water users in Action Item 1.3.1, and developing a  
2 monitoring and communication protocol for consistency across the basin. The basin  
3 drought contingency plan will serve as a guide for plans developed by each  
4 individual NRD. District-level mitigation measures and response actions  
5 corresponding to the drought conditions will be identified and implemented at the  
6 individual NRD level. Elements of a drought contingency plan include:

- 7 1. Vulnerabilities (Action Item 1.3.1)
- 8 2. Monitoring protocols (basin plan)
- 9 3. Triggers (individual NRD plans)
- 10 4. Mitigation actions (individual NRD plans – potentially basin-wide activities)
- 11 5. Response actions (individual NRD plans – potentially basin-wide activities)
- 12 6. Plan administration (individual NRD plans and basin plan)

13  
14 **Action Item 1.3.4.1:** Develop a basin drought monitoring protocol for  
defining and determining drought conditions.

15 This effort will focus on defining the severity of drought conditions (including  
16 identifying trigger points that will be linked to response actions) and  
17 determining the protocols for monitoring drought conditions at a basin level.  
18 The focus is on providing consistency and communication of basin drought  
19 conditions. The monitoring protocol will identify information and an  
20 approach to determining basin drought severity. Examples of information  
21 that can be used include snowpack, stream flow, system storage, soil  
22 moisture, National Drought Mitigation Center reports, Standardized  
23 Precipitation Index reports, and aquifer levels.

24 The result of this effort is intended to be consistency in communicating  
25 drought conditions to users across the basin.

26 **Action Item 1.3.4.2:** Identify potential basin-wide mitigation and  
response actions to drought conditions and opportunities for  
cooperation across the basin (that is, management of storage  
water).

27 The individual NRD drought mitigation plans will contain mitigation and  
28 response actions specific to each district. The responsibility for  
29 implementation of those activities will, therefore, lie with each district. The  
30 purpose of this action item is to identify potential mitigation and response  
31 actions that are basin-wide or near basin-wide in scale, and/or involve  
32 multiple entities within the basin (NeDNR, NRDs, irrigation districts, power  
33 districts, etc.).

**Action Item 1.3.4.3:** Conduct a drought simulation workshop with NeDNR, NRDs, and water users to assist in developing and testing of protocols during a drought.

The workshop will test the proposed monitoring and communication protocols, as well as potential mitigation and response actions through simulation of conditions from a historic drought period.

**Action Item 1.3.4.4:** Identify roles for administering and implementing basin drought contingency plan.

The administration of the basin drought contingency plan requires defining specific roles and responsibilities for monitoring, communication, and implementation activities at the basin level. In addition, protocols for updating the plan need to be developed for inclusion in the plan administration.

**Objective 1.4:** Conduct technical analyses to support and evaluate effectiveness of plan and adequacy in sustaining progress toward a fully appropriated level of water use.

This objective focuses on the technical analyses of water supplies and uses to support plan implementation and evaluation. Specific activities include:

- An annual review of any permitted new and expanded uses of surface water and groundwater within the basin and associated mitigations (Action Item 1.4.1)
- An evaluation (robust review) of pre- and post-July 1, 1997 development (Action Item 1.4.2)
- An evaluation of current and fully appropriated conditions (Action Item 1.4.3)
- Development of necessary tools and technical analyses to support the robust review (Action Item 1.4.4)

**Action Item 1.4.1:** NeDNR and the NRDs will continue to assemble and share data annually on any permitted new and expanded uses of surface and groundwater and any associated mitigations in the basin.

Statute describes both an annual review (*Neb. Rev. Stat. §46-715(5)(d)(ii)*) and a second more robust review of new and expanded uses and associated mitigation actions (*Neb. Rev. Stat. §46-715(5)(d)(iii)*) (Action Item 1.4.2). NeDNR and the NRDs will annually share data on any permitted new and expanded uses of surface water and groundwater and any associated mitigations in the basin. Data will be shared in accordance with the requirements of state statutes, including meeting compliance

1 with the individual IMPs and the Nebraska New Depletion Plan. Data will be analyzed  
2 to assess the collective amount, timing, and locations of the depletions to  
3 streamflows resulting from new or expanded uses and the collective amount, timing,  
4 and locations of all mitigations put in place. These analyses will be done using the  
5 agreed upon methods and tools. The results of these analyses will be shared as part  
6 of the annual reporting for this plan described in Objective 5.1. Methods and tools  
7 used will be available to the stakeholders and the public. Basin-wide data collected  
8 will then be trimmed to the relevant Platte River Recovery Implementation Program  
9 area, analyzed, and used for required annual and periodic reporting for the Nebraska  
10 New Depletion Plan, helping facilitate Nebraska's compliance with the Nebraska  
11 New Depletion Plan (supporting Goal 2). Details of annual reporting requirements  
12 can be found within the Monitoring and Studies Chapter of each district's IMP. The  
13 most recent annual reports can be found on the Department's website. Recent  
14 reports are included as **Appendix YYY**.  
15

**Action Item 1.4.2:** An evaluation (robust review) of the impact of pre- and  
post-July 1, 1997, development and progress towards plan's  
goals/objectives/action items shall be conducted for each plan  
increment.

16  
17 The purpose of the robust review is two-fold: 1) Update estimates of depletions from  
18 pre- and post-July 1, 1997 development; and 2) Evaluate management actions taken  
19 and their overall effectiveness in making progress towards the goals and objectives  
20 outlined in the plan. The latter purpose serves as the basis for determining the need  
21 for further increments, and if so, to inform the planning process for the next  
22 increment. The process for the evaluation is described in *Neb. Rev. Stat. §46-*  
23 *715(5)(d)(iii)* and will identify the following information:

- 24 • A 50-year estimate of the streamflow depletions associated with pre- and post-  
25 1997 levels of water use development within the hydrologically connected area  
26 of the over-appropriated basin within each NRD and within the entirety of the  
27 NRD.
- 28 • A 50-year estimate of streamflow accretions associated with management  
29 actions implemented by each NRD and NeDNR within the hydrologically  
30 connected area of the over-appropriated basin within each NRD and within the  
31 entirety of the NRD.
- 32 • A summary of the net streamflow depletions within the over-appropriated basin  
33 resulting from groundwater pumping within each NRD.  
34

35 The net streamflow depletions estimated may need to be adjusted based on actual  
36 hydrologic conditions to reflect the requirement to offset only those amounts  
37 needed to prevent depletions to (A) surface water appropriations; (B) water wells  
38 constructed in aquifers dependent on recharge from streamflow; and (C) ensure

1 compliance by Nebraska with the New Depletion Plan included in the Platte River  
2 Recovery Implementation Program, for as long as the Program exists.  
3

4 The data collected on an annual basis (Action Item 1.4.1) will be used to update  
5 land use datasets for the accepted modeling tools. The models will be used to  
6 assess impacts of the permitted activities as part of the robust review process. The  
7 robust review will also evaluate the effects of other actions taken to reduce  
8 consumptive use and enhance streamflows to meet the goals and objectives in the  
9 plan.

10 During the first increment, the robust review and evaluation of depletions focused  
11 on the impacts to stream baseflows. The groundwater modeling tools are used to  
12 assess baseflow impacts. During the second increment of the plan, more focus will  
13 be given to activities that may have broader impacts and the impacts to overall  
14 streamflows may be evaluated, which would require the use of integrated modeling  
15 tools that incorporate surface water. NeDNR and the NRDs will agree upon when  
16 it may be appropriate to use integrated modeling tools, what methods should be  
17 use, and how evaluations will be done.

18 The general method for conducting the robust review will be as follows:

- 19 i. The groundwater models used for this process will be calibrated to  
20 streamflows/baseflows and groundwater levels in the area with the ability  
21 to assess the impacts on a monthly basis. The groundwater models will be  
22 updated periodically to simulate the management practices that have been  
23 implemented to date. The evaluation period of these models will be 50  
24 years into the future.
- 25 ii. The following groundwater model runs will be conducted to measure the  
26 success toward reaching Objective 1.2:
  - 27 a. The 1997 Development Level Run. A model run that simulates  
28 holding the number of irrigated acres and crop types or mix in 1997  
29 constant through the current date and the fifty-year projection  
30 period. It will assume the full crop irrigation requirement for the  
31 crop types or mix. The run will be conducted using climate data  
32 through the current date and will include a fifty-year projection  
33 using an agreed to climate pattern.
  - 34 b. The Historical Run. A model run that simulates the actual annual  
35 changes of the irrigated acres, excess flow recharge events,  
36 retirements, allocation effects, augmentation projects, and other  
37 water management regulations or projects throughout the  
38 evaluation period starting in 1997 through the current date and the  
39 fifty-year projection period. The fifty-year projection period will

1 repeat an agreed to land use, regulation, or project dataset. The  
2 model will use available flow meter data or, in the absence of flow  
3 meter data, assume the full crop irrigation requirement was met at  
4 all times. The run will be conducted using data through the current  
5 date and will include a fifty-year projection using an agreed to  
6 climate pattern.

7 c. Difference between the 1997 Development Level Run and the  
8 Historical Run. The simulated output from each model run will be  
9 compared to determine the difference in the baseflow that has  
10 resulted from post-1997 development.

11 d. Surface Water Accretions and Other Uses not Covered by the  
12 Models. If surface water acres are retired to offset streamflow  
13 depletions due to new uses begun subsequent to July 1, 1997,  
14 accretions resulting from those retirements will be determined  
15 using agreed upon methodologies. This would include conjunctive  
16 management activities that are not otherwise captured in the  
17 models.

18 e. Evaluation Results. For Objective 1.2 to be considered achieved, the  
19 results of combining the difference between the 1997 Development  
20 Level Run and the Historical Run with the addition of surface water  
21 accretions and other uses not covered by the models must be  
22 greater than or equal to zero.

23 
$$(simulated\ streamflow/baseflow\ from\ the\ Historical\ Run) - (simulated$$

24 
$$streamflow/baseflow\ from\ the\ 1997\ Development\ Level\ Run) + (other\ Surface$$

25 
$$Water\ Accretions) = Net\ Depletions$$

26 (\*\*\*)Note: In equation above, streamflow/baseflow is positive)

27  
28 iii. An additional groundwater model run will be conducted to measure total  
29 depletions. This will be the Pre-Development Run. The Pre-Development  
30 Run will simulate no groundwater development. The run will be conducted  
31 using climate data through the current date and will include a fifty-year  
32 projection using the historical Run's agreed to climate pattern.

33 a. Total Depletions Evaluation.

34 
$$(simulated\ streamflow/baseflow\ from\ the\ Historical\ Run) -$$

35 
$$(simulated\ streamflow/baseflow\ from\ the\ Pre-Development\ Run) =$$

36 
$$Total\ Depletions$$

37 (\*\*\*)Note: In equation above, streamflow/baseflow is positive)

38 iv. If integrated models are used to assess impacts to the total streamflow, the

1 methods to be used will be developed jointly between NeDNR and the  
2 NRDs to properly design and constrain those analyses so that the results  
3 can be used to assess progress toward the goals and objectives of the plan.  
4

5 For Conjunctive Management Projects, or other management actions taken to meet  
6 the objectives and goals of the Basin-Wide Plan, the conceptual basis for the analysis  
7 will be to compare the new water balance effect of the management action to the  
8 1997 level of development water balance effect of the management action.

9 Activities such as conjunctive management projects, land use changes, retirement  
10 of irrigated acres, etc. can be represented in the modeling tools and compared to  
11 the 1997 level of development model results to evaluate the effects on water  
12 supply in the basin in relation to the 1997 level of development and the  
13 effectiveness of those activities at offsetting post-1997 levels of depletions.

14 In other cases it may be necessary to compare the management activities to the  
15 historical run to assess their impacts or to other model runs that may not be the  
16 same as the historical run or 1997 development level run described above. This will  
17 need to be assessed on a case-by-case basis to determine the best approach to  
18 appropriately evaluate the impacts and effectiveness.  
19

**Action Item 1.4.3:** Continue to refine the methodology used to determine the  
difference between the current and fully appropriated levels of  
development in each NRD.

20 The evaluation of the difference between current and fully appropriated levels of  
21 development is tied to Statute and the current rules of the NeDNR for declaring a  
22 basin fully appropriated. Statute requires that this evaluation will:

- 23 • take into account cyclical supply, including drought;
- 24 • identify the portion of the overall difference that is due to conservation  
25 measures;
- 26 • identify the portion of the overall difference that is due to water use initiated  
27 prior to July 1, 1997; and
- 28 • identify the portion of the overall difference that is due to water use initiated or  
29 expanded on or after July 1, 1997.  
30

31 The current NeDNR rules for determining fully appropriated status includes  
32 evaluation of the most junior appropriator's access to water, adjustments for lag  
33 effect of groundwater depletions and accretions on water supplies, and  
34 consideration of instream flows, among other guidance for conducting the analysis.  
35 The rules also provide flexibility for NeDNR to "...utilize a standard of interference  
36 appropriate for the use, taking into account the purpose for which the appropriation

1 was granted...<sup>3</sup> for uses which are not defined in the rule. These include storage  
2 and hydropower appropriations, which are significant appropriators in the Upper  
3 Platte River Basin. NeDNR and the NRDs have and will continue to work with  
4 impacted water users on the process for determining the difference between the  
5 current and fully appropriated condition of the basin.

6 Prior to development of the First Increment Plan, as a preliminary step in developing  
7 the overall difference between fully and over appropriated conditions,  
8 Representatives of NeDNR, the Central Nebraska Public Power and Irrigation District  
9 (CNPPID), Nebraska Public Power District (NPPD), and Central Platte Natural  
10 Resources District performed a preliminary estimate of the changes in stream reach  
11 gains and surface water demands affected by such reach gain changes, *Preliminary*  
12 *Estimate of Historical Stream Flow Reductions in the Overappropriated Portion of the*  
13 *Platte River in Nebraska* (see Appendix ZZZ).

**Action Item 1.4.3.1:** Continue to study the effects of conservation  
measure effects on the overall difference between current and fully  
appropriated conditions.

14  
15  
16 During implementation of the first increment plan, Phase I and Phase II of a  
17 study of the effects of conservation measures on water supplies was  
18 completed. Phase I (Appendix AAA) focused on an overall evaluation of a wide  
19 spectrum of conservation measures across the basin. The results of this study  
20 were used to inform and focus the evaluation of Phase II of the study. Phase II  
21 (Appendix BBB) focused on two types of conservation measures: 1) the effects  
22 of tillage practices and 2) irrigation efficiencies on available water supplies.  
23 Tillage practices and irrigation efficiencies are driven by producer choices and  
24 are considered part of the spectrum of producer practices. Current evaluation  
25 of the study results indicates that changes in tillage practices and  
26 irrigation efficiency changes over time have impacted available water  
27 supplies in varying degrees across the basin.

28  
29 Additional studies, building on the results of what was learned in Phases I and  
30 II of the conservation measures study will be conducted during the second  
31 increment to further evaluate the effects of conservation measures on the  
32 overall difference between current and fully appropriated conditions, including  
33 verification of appropriate representation of existing and proposed producer  
34 practices in modeling tools.

35 In the current modeling tools, current levels of consumptive use are

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<sup>3</sup> Title 457, Chapter 24, Section 001.01B of the Nebraska Administrative Code, dated June 27, 2008.

1 established based on the current understanding of on-farm producer  
2 practices, crop types, and current water management regulations. Changes  
3 from the current level of consumptive water use due to changes in  
4 production practices (on-farm practices, crop type, etc.) and current water  
5 management regulations will be estimated and compared to the current  
6 level of consumptive uses to determine and track offsets.

7  
8 **Action Item 1.4.3.2:** As part of understanding the difference between the  
9 current level of development and a fully appropriated level of  
10 development, an evaluation of the balance of water supplies and  
11 demands shall be conducted for each plan increment.

12 As part of understanding the difference between the current level of  
13 development and a fully appropriated level of development, an evaluation  
14 of the balance of water supplies and demands shall be conducted for each  
15 10-yr plan increment.

16 An assessment of water supplies and water demands within the basin has  
17 been conducted during implementation of the first increment. This  
18 assessment generally followed the NeDNR INSIGHT methodology for  
19 determining the quantity of available hydrologically connected water  
20 supplies and the demands on those supplies. The analysis looks at supplies  
21 over a representative climate period taking into account wet and dry phases  
22 of the hydrologic cycle. Consumptive and non-consumptive surface water  
23 demands are considered as well as groundwater depletions and  
24 groundwater consumptive use. A description of the INSIGHT methodology  
25 as applied to the Upper Platte Basin is included in **Appendix ZZZZ**. INSIGHT  
methodologies will continue to be revised as necessary during this plan  
increment and used to assess total supplies and total demands within the  
basin and methodologies refined as necessary.

**Action Item 1.4.4:** The NRDs and NeDNR will continue to cooperate on the  
development of the necessary modeling tools or technical analyses  
that are aimed at providing updated or refined estimates for the  
robust review.

26 Throughout this plan document the terms “agreed upon tools/models/analysis”  
27 are used. As this basin-wide plan and the IMPs are joint plans between NeDNR  
28 and the NRDs, all tools, models, analyses used to evaluate the progress toward the  
29 goals and objectives of this BWP or the related IMPs must be jointly developed  
30 and agreed upon by NeDNR and the NRDs. Methods, tools, and data used will be  
31 made available to the stakeholders and the public.

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**Objective 1.5:** Use available funds and actively pursue new funding opportunities to offset depletions as well as to develop, maintain and update data and analytical tools needed to implement this plan.

NeDNR and the NRDs will identify and pursue funding opportunities to support plan implementation. Funding sources may include federal, state, and local partners in addition to NeDNR and NRD contributions. Funding priorities identified in the action items include:

- Reductions in consumptive use
- Enhancement of water supplies
- Maintaining existing and implementing proposed projects to meet goals of this plan
- Data acquisition and maintenance, and model improvements for plan implementation

**Action Item 1.5.1:** Cooperate with the federal government to use programs such as the Conservation Reserve Enhancement Program and others that promote reductions in consumptive use and enhance water supplies.

**Action Item 1.5.2:** Encourage Platte River Basin NRDs, agencies, and water users to participate in these programs.

**Action Item 1.5.3:** Work to secure necessary funding for existing and proposed projects that will advance the goals of this plan.

**Action Item 1.5.4:** Maintain, improve, or acquire data and modeling tools, as agreed by NeDNR and the Platte River Basin NRDs that will be useful for assessing progress and further implementing this plan.

**Objective 1.6:** Update and continue implementing IMPs in each Platte River Basin NRD.

This objective provides guidance for each individual NRD Platte River Basin IMP and outlines its relation to this basin-wide plan.

**Action Item 1.6.1:** Update individual NRD IMPs to be consistent with this Upper Platte River Basin-Wide Plan.

Each of the NRDs currently has an IMP that will be updated for consistency with this

1 basin-wide plan. In addition, each IMP will:

- 2 • Identify management options that will help to achieve the goals and objectives
- 3 of this plan.
- 4 • Management actions should take into account the cyclical nature of water
- 5 supplies as well as the impact of conservation measures.
- 6 • Management options available to be used in the IMPs to address the objectives
- 7 of the second and any subsequent increments are those found in Nebraska
- 8 Revised Statutes 46- 716 and 46-739. Other options that are not regulatory
- 9 include, but are not limited to: augmentation and retiming projects; alternative
- 10 management of canals; new storage reservoirs or underground storage; water
- 11 banking; incentive programs for retiring irrigated acres or purchasing surface
- 12 water; alternative management of existing reservoirs; PRRIP water action plan
- 13 projects; and drought management plans. The Historical Run for the robust
- 14 review described in Action Item 1.4.2 serves as the basis for evaluating
- 15 management options and their effectiveness.
- 16 • Riparian and riverine vegetation control may be considered as a management
- 17 option when a change in consumptive use can be scientifically estimated and
- 18 there is a comprehensive assessment of changes in such vegetation over the
- 19 development period.
- 20 • Ensure that depletions caused by new or expanded uses within each Platte River
- 21 Basin NRD are offset.
- 22 • Describe how progress toward the depletion reduction objective for that Platte
- 23 River Basin NRD is to be measured. Possible tools to use for such measurements
- 24 include, but are not limited to the following:
- 25 ○ tracking reductions in irrigated acres;
- 26 ○ monitoring reductions in consumptive water uses; and
- 27 ○ performing new model runs.
- 28 • Include actions that will offset depletive impacts of post- July 1, 1997, water uses
- 29 outside the over-appropriated area, to the extent that those new uses deplete
- 30 streamflows within the over-appropriated area.
- 31 • Allow for the transfer of certified acres within and across NRD boundaries, while
- 32 not increasing streamflow depletions to the Platte River.
- 33

**Action Item 1.6.2:** Monitor and amend individual IMPs as needed to keep the  
34 IMPs current.

35 During implementation of the IMPs, NeDNR and the NRDs will monitor IMP actions  
36 consistent with the analyses and methods contained in the basin-wide plan and  
37 amend the IMP if activities are determined by the parties to not be capable of  
38 meeting goals. If NeDNR and a Platte River Basin NRD determine that management  
39 actions have not provided the offsets required to meet the goals of the Upper Platte

1 River Basin-Wide Plan, they will agree to increase offset activities to the extent  
2 possible and revise the individual district IMP if necessary. These revisions may  
3 include additional controls, if needed, to meet goals of the plan.

4  
**Action Item 1.6.3:** As prescribed by Nebraska Revised Statute 46-715(5)(d)(iv), a  
consultative and collaborative process shall identify goals and objectives  
for subsequent increments, if necessary, of the Individual NRD IMPs.

5  
6 NeDNR and the individual NRDs will engage stakeholders in a collaborative process in  
7 the development of goals and objectives for subsequent increments (beyond the  
8 second increment) of the individual IMPs if necessary. The need for subsequent  
9 increments will be determined through the robust review process completed at the  
10 end of the second increment and described in Action Item 1.4.2. Should a subsequent  
11 increment be necessary, the planning process will be initiated by NeDNR and each  
12 NRD developing a public participation plan that outlines the stakeholder engagement  
13 process for the NRD's IMP, including identification of participants/parties, definition of  
14 roles, decision making protocols, planning processes, and timelines. This public  
15 participation plan serves as a reference guide for participants as well as the general  
16 public throughout the planning process. This effort is analogous to the basin-wide  
17 collaborative process described in Objective 5.3, but focused on the individual NRD  
18 stakeholder collaboration. The public participation plan developed for the second  
19 increment basin-wide plan development is included in **Appendix PPP** for reference.  
20

21  
**Goal 2:** Prevent or mitigate human-induced reductions in the flow of a river or stream that  
would cause non-compliance with an interstate compact or decree or other formal  
state contract or agreement.

22 Maintaining compliance with Nebraska Revised Statutes 46-713(3), including commitments under  
23 compacts, decrees, and other formal agreements is a fundamental goal that must be considered  
24 throughout implementation of all goals, objectives, and action items identified in the plan. This  
25 goal applies not only to those activities included in this plan, but also to activities of the individual  
26 NRD IMPs.

27  
**Objective 2.1:** Prevent human-induced streamflow depletions that would cause non-  
compliance by Nebraska with the Nebraska New Depletion Plan included  
within the Platte River Recovery Implementation Program, for as long as the  
Program exists.

28 Nebraska's New Depletion Plan (Attachment 5, Section 8 of the Program Document)  
29 describes the actions Nebraska proposes to take to prevent or mitigate for new depletions  
30 to current United States Fish and Wildlife Service target flows and state protected flows as

1 described in the Nebraska New Depletion Plan as part of the state’s commitment to the  
2 Platte River Recovery Implementation Program. New depletions are defined as those uses  
3 started or expanded on or after July 1, 1997. The current United States Fish and Wildlife  
4 Service target flows were developed for the first increment of the program and considered  
5 the social and environmental health of the Platte River. The target flows are included in the  
6 Program Document and will be reevaluated during the extension of the first increment of  
7 the Program. Should the target flows change based on the reevaluation, the Nebraska New  
8 Depletion Plan will be updated accordingly.

9 This objective specifies that activities within the basin during plan implementation must  
10 maintain compliance with the Nebraska New Depletion Plan, that is, depletions to United  
11 States Fish and Wildlife Service target flows and state protected flows, as described in the  
12 Nebraska New Depletion Plan, must be prevented or mitigated. In doing so, this objective  
13 addresses the requirements of 46-715(2) to maintain the social and environmental health  
14 of the basin.

15 This objective recognizes that naturally occurring variations in the basin’s hydrologic cycle  
16 affects basin water supplies; therefore, the focus of this objective is explicitly on impacts of  
17 human-induced depletions to water supplies.

**Action Item 2.1.1:** Ensure that the groundwater and surface water controls adopted in the individual NRD IMPs are sufficient to ensure that the state will remain in compliance with the Nebraska New Depletion Plan.

18  
19 This action item specifies that during consideration and development of the controls  
20 for inclusion in the individual NRD IMPs, NeDNR or the NRDs will evaluate the net  
21 effects of the IMP controls to ensure they are adequate to prevent or mitigate  
22 depletions to as identified in the Nebraska New Depletion Plan.

**Action Item 2.1.2:** Collectively, as defined in the Nebraska New Depletion Plan, offset the new depletions caused by new uses within the Platte River Basin NRDs.

23  
24 In this context, the term offset is an action that either reduces water use or increases  
25 the water supply in an amount corresponding to the estimated volume of authorized  
26 new depletions. Depletive effects of new uses, as defined in the Nebraska New  
27 Depletion Plan, continue to accrue and must be offset to maintain compliance with the  
28 Nebraska New Depletion Plan. Statutory guidance regarding new depletions is  
29 provided in 46-715(3). Procedures for offsetting depletive effects of new uses are now  
30 and will continue to be identified and described in the individual NRD IMPs.  
31

**Action Item 2.1.3:** Prepare reports to Governance Committee of the Platte River Recovery Implementation Program on status and activities related to Nebraska New Depletion Plan.

This action item is closely related to and coordinated with Objective 1.4 where technical analysis and reporting efforts for activities within the basin are outlined. As outlined in Action Item 1.4.1, the annual reporting and data exchange efforts of NeDNR and NRDs will include portions of the basin covered by the Platte River Recovery Implementation Program and will be used in preparing annual and other periodic reports to the Governance Committee as identified in the Nebraska New Depletion Plan.

**Goal 3:** Partner with municipalities and industries to maximize conservation and water use efficiency.

Municipal and industrial groundwater users are an important group of water users in the basin. The availability of water to these users directly affects the social and environmental health, safety, and welfare of the basin. Existing users must be protected while ensuring compliance with state laws and the Nebraska New Depletion Plan. Section 46-715 (3) provides guidance and procedures that enable new development to occur with appropriate offsets, facilitating future growth while protecting existing uses.

Conservation and efficiency are needed for local populations to sustain water supplies and provide opportunity to grow and attract new industries. This objective is not intended to dictate development of conservation plans, but rather foster an understanding of current water usage and identify potential conservation measures that would benefit overall water supplies. The first step is to understand how water is being used by municipalities and industries and to understand the challenges they face.

**Objective 3.1:** Continue to collect data on water use and existing conservation plans of municipalities and industries within the basin.

**Action Item 3.1.1:** To advance understanding of water usage by municipalities and industries, gather information on total pumping, consumptive use, and timing of any return flows and collect data on water use efficiency and conservation methods being employed.

**Action Item 3.1.2:** Uniformly assess consumptive use, impacts on streamflows, and requirements and responsibilities for offsets due to current and expanded municipal and industrial uses, using agreed upon modeling tools. Consistent methods for tracking municipal and industrial consumptive use will be specified in individual NRD IMPs.

**Action Item 3.1.3:** If any municipalities have formal conservation plans in place, review these for strategies that can be applied to other municipalities in the basin.

**Objective 3.2:** Invite municipalities and industries to the annual meetings.

**Action Item 3.2.1:** To improve communication among all entities in the basin regarding water uses and facilitate the sharing of data, all municipalities and industrial users in the basin will be invited to the annual basin-wide meetings.

**Action Item 3.2.2:** Solicit feedback from municipalities and industries on impacts of water regulations, restrictions, and conservation on their development, ability to attract new industries and accommodate economic growth.

**Action Item 3.2.3:** Communicate to municipalities and industries the changes that will occur when relevant statutes change in 2026, making sure expectations and requirements are clear, and work with them to develop strategies.

**Action Item 3.2.4:** Keep open conversations going about what is being done and what can be done to conserve water and what impacts conservation has on streamflows.

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**Objective 3.3:** Establish baseline water use levels for each municipal and industrial user by January 1, 2026.

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**Action Item 3.3.1:** Use data collected from the municipalities and industries to develop water use baselines, incorporating feedback and input received. In accordance with statute, the base amount of the allocation for a municipality shall be determined as the greater of either a) the amount of water authorized by a permit, or b) their greatest annual use for governmental, commercial, and industrial use prior to January 1, 2026, plus a per capita allowance.

**Action Item 3.3.2:** In accordance with Nebraska Revised Statute 46-740, prior to January 1, 2026, the NRDs will continue to offset increases in municipal and industrial consumptive water use that result in depletions. The NRDs are responsible for offsetting any new depletions that occur from 1997 to 2026 due to new or expanded municipal and industrial uses, with the exception of industrial consumptive uses greater than 25 million gallons per year.

**Action Item 3.3.3:** On and after January 1, 2026, after municipal and industrial baselines have been established, the requirement to offset any new uses beyond the baseline that cause depletions to streamflows will be assumed by municipalities and industrial uses. This can be addressed in the individual NRD IMPs.

**Action Item 3.3.4:** Any reductions in consumptive use by municipalities or industrial users, prior to January 1, 2026, that result in accretions to streamflow will accrue as benefit to the NRDs (and go toward offsetting post-1997 depletions or returning to fully appropriated condition). Any reductions in consumptive use by municipalities or industrial users on and after January 1, 2026 that result in accretions to streamflow may accrue as benefit to the NRDs.

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**Goal 4:** Work cooperatively to identify and investigate disputes between groundwater users and surface water appropriators and, if determined appropriate, implement management solutions to address such issues.

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There is a hydrologic connection of surface water and groundwater resources and the potential exists for uses to affect one another. NeDNR and the NRDs will work cooperatively with basin water users to identify potential conflicts, evaluate those conflicts, and if appropriate, implement

1 solutions to address conflicts.

**Objective 4.1:** Identify disputes between groundwater users and surface water appropriators.

2  
3 The purpose of this objective is to identify potential conflicts between surface water and  
4 groundwater users, with Action Items 4.1.1 and 4.1.2 outlining the processes for identifying  
5 potential conflicts.

**Action Item 4.1.1:** Surface water appropriators or groundwater users may present data and other supporting information identifying the nature and scope of potential disputes at the annual meeting.

6  
7 Any surface water or groundwater user in the basin with a potential conflict may  
8 submit data and supporting information to NeDNR and the NRDs for consideration.  
9 The submittal should include a concise description of the potential conflict, as well  
10 as relevant information for NeDNR and the NRDs to use in their evaluation.

**Action Item 4.1.2:** The Platte River Basin NRDs and NeDNR may present data and other supporting information identifying the nature and scope of potential disputes at the annual meeting.

11  
12 This action item provides the opportunity for the NeDNR and the Platte River Basin  
13 NRDs to provide information to basin water users and the public on potential  
14 conflicts occurring within the basin at the annual meeting.

**Objective 4.2:** Investigate and address issues between groundwater users and surface water appropriators, based on investigation results.

15  
16 Once potential conflicts have been identified, Action Items 4.2.1 through 4.2.5 outline the  
17 approach and roles of NeDNR, the basin NRDs, and affected users in evaluating and  
18 addressing conflicts.

**Action Item 4.2.1:** NeDNR and the Platte River Basin NRDs shall determine whether specific disputes identified via Goal 5, Objective 1, have a hydrologic impact.

**Action Item 4.2.2:** NeDNR and the Platte River Basin NRDs will investigate a given dispute to determine whether the issue should be addressed through modification of the Upper Platte River Basin-Wide Plan, individual NRD IMPs, or by other means.

**Action Item 4.2.3:** If it is determined, as a result of the investigation, that the issue is not a basin-wide issue, the issue will be turned over to the appropriate affected NRD(s) or NeDNR.

**Action Item 4.2.4:** NeDNR or the affected Platte River Basin NRD(s), as determined in Action Item 4.2.3, working with the affected water user(s), shall develop management solutions, as appropriate, to address the issue(s).

**Action Item 4.2.5:** NeDNR and the affected Platte River Basin NRD(s) shall update the Upper Platte River Basin-Wide Plan and/or individual IMP, as appropriate.

**Goal 5:** Keep the Upper Platte River Basin-Wide Plan current and keep stakeholders informed.

**Objective 5.1:** Meet at least annually to review progress toward achieving the goals and objectives of this Upper Platte River Basin-Wide Plan and those portions of individual NRD IMPs that implement this plan.

Annual meetings will be held in June or July each year, unless agreed to otherwise, at a location designated by NeDNR and the NRDs. Discussion shall include, but not be limited to the following:

1. revisions to this Plan;
2. revisions to IMPs;
3. new data and information, including items like consumptive use calculations for municipal, livestock and industrial uses;
4. disputes related to implementation of IMPs; and/or
5. any other topic which the DNR and the Platte Basin NRDs have mutually agreed to discuss.

A proposed agenda will be made available to the public, along with any available supporting documents, at least two weeks prior to the annual meeting. As a result of actions taken at the annual meeting, the Plan may be revised if necessary.

1  
2 Stakeholder and/or public feedback concerning the Basin-Wide Plan or individual IMPs will be  
3 considered in the following process:

4 1. Basin-Wide Plan

- 5 a. Any ground water user, surface water appropriator, NRD, or DNR may, at least 30  
6 days before the annual review meeting between the NRDs and DNR, send a written  
7 request to DNR or a Platte Basin NRD for revision to the Basin-Wide Plan.  
8 i. The affected Platte Basin NRD(s) and DNR will review the proposed  
9 issues prior to the annual meeting.  
10 ii. Opportunity for input regarding the proposed issues will be provided  
11 to the party making the request during the annual meeting.  
12 iii. Written requestors will receive a written response, regardless of whether the  
13 NRDs and DNR agree to consider proposed Plan revisions.  
14 b. If DNR and the Platte River Basin NRDs agree to consider potential revisions to  
15 the Basin-Wide Plan, then the public will be notified of the potential revisions  
16 to the Basin-Wide Plan, and input will be solicited at a minimum via a hearing.  
17 i. An advisory or stakeholder group may be convened, if the affected NRD(s) and  
18 DNR determine that the proposed changes warrant the formation of such a  
19 group.  
20 c. After receiving public comments, Basin-Wide Plan revisions will be  
21 considered for adoption.  
22 d. If the NRD(s) and DNR agree on revisions to the Basin-Wide Plan, then a hearing  
23 will be held to solicit formal comment. Following the public hearing, the proposed  
24 changes will be considered and may be adopted.

25 2. IMPs

- 26 a. If the overappropriated Basin-Wide Plan is revised, then revisions to the  
27 overappropriated basin portion of individual Platte Basin IMPs will be made as  
28 necessary, in accordance with Neb. Rev. Stat. § 46-715(4).  
29 b. If the Platte River Basin NRD(s) and DNR agree on revisions to an IMP after the  
30 annual meeting, then a hearing will be held to solicit formal comment. The  
31 IMPs for each of the five Platte Basin NRDs shall be provided to all other NRDs  
32 in the overappropriated basin for comment before revisions are approved.  
33 c. DNR and any Platte Basin NRD may amend an IMP as more data and  
34 information become available, as provided in Neb. Rev. Stat. § 46-715(4)(d)(ii).

**Action Item 5.1.1:** Regular presentations are anticipated to include an annual forecast of basin water supply and demand, current understanding of economic impacts of supply variability on water users as well as impacts to social and environmental health, safety and welfare, and summary of conservation efforts of municipalities and industries.

**Action Item 5.1.2:** Present summary of conservation plans of municipalities and industries within the basin.

**Objective 5.2:** Improve information sharing with interested stakeholders.

**Action Item 5.2.1:** Maintain a database of interested stakeholders; it is the responsibility of interested parties to keep their contact information current by notifying NeDNR or their respective NRD of changes.

**Action Item 5.2.2:** Send notice of annual meeting to interested stakeholders, municipalities, and industries.

**Action Item 5.2.3:** Send electronic notice when new reports pertinent to this plan have been published to the internet.

**Objective 5.3:** Conduct planning for subsequent increments of the plan, as necessary.

**Action Item 5.3.1:** As prescribed by Statute, a consultative and collaborative process shall identify goals and objectives for subsequent increments, if necessary, of the basin plan.

NeDNR and the NRDs will engage stakeholders in a collaborative process in the development of goals and objectives for subsequent increments of the basin plan if necessary. The need for subsequent increments will be determined through the robust review process described in Action Item 1.4.2. Should a subsequent increment be necessary, the planning process will be initiated by NeDNR and the NRDs by developing a public participation plan that outlines the stakeholder engagement process, including identification of participants/parties, definition of roles, decision making protocols, planning processes, and timelines. This public participation plan serves as a reference guide for participants as well as the general public throughout

1 the planning process. The public participation plan developed for the second  
2 increment basin-wide plan development is included in **Appendix PPP** for reference.  
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